What is claimed is:

1. In a monitoring apparatus having a detection area for use in a measurement operation, said monitoring apparatus being adapted to receive waves from said detection area and to output data for specifying at least a position of a target object in said detection area at least from the quantity of the received waves, a method of adjusting axial displacement of said detection area in a rolling direction, said method comprising the steps of:

preparing a target, said target having a detection surface with a specified outer shape, a bright part with a higher reflectivity for waves and a dark part with a lower reflectivity than said higher reflectivity for waves being arranged over said detection surface in a specified pattern, wherein a waveform of wave quantity having a double-peaked shape corresponding to at least one selected from the group consisting of said pattern and said outer shape of said detection surface is obtained with respect to a standard position in a standard direction if said measurement operation is carried out in said standard direction by directing said detection area of said monitoring apparatus towards said detection surface;

setting said target in front of said monitoring apparatus by matching a standard direction of said detection surface with an expected standard direction of said detection area;

obtaining axial displacement of said detection area in said rolling direction by repeating said measurement operation at least twice by changing measurement position in a perpendicular direction which is perpendicular to said standard direction and by calculating each time a standard position of said detection surface in said standard direction from the waveform, and

correcting said axial displacement by a correction step selected from the group consisting of adjusting an attachment angle of said monitoring apparatus and changing a parameter for setting said detection area.

2. The method of claim 1 wherein said outer shape of said detection surface includes a pair of side edges that are parallel to said perpendicular direction, wherein said

detection surface has a smaller width in said standard direction than said detection area, wherein said pattern includes an elongated area extending over a center part of said detection surface and a pair of flanking areas on both sides of said elongated area, wherein either of said elongated area and said flanking areas is said dark area, the other being said bright area, and wherein said standard position is calculated from standard direction position data of points which are on opposite sides of said double-peaked shape and at which the measured quantity of received waves is the same as at said valley between said two peaks.

3. The method of claim 1 wherein said pattern includes an elongated area extending over a center part of said detection surface, a pair of flanking areas on both sides of said elongated area and a pair of background areas on both sides of said flanking areas in said standard direction, wherein either of said elongated area and said flanking and background areas is said dark area and the other being said bright area, wherein boundaries between said flanking and background areas on both sides in said standard direction are parallel to said perpendicular direction, wherein said parallel boundaries are separated by a distance that is smaller than the width of said detection area in said standard direction, and wherein said standard position is calculated from standard direction position data of points which are on opposite sides of said double-peaked shape and at which the measured quantity of received waves is the same as at said valley between said two peaks.

4. The method of claim 1 wherein said detection surface has a smaller width in said standard direction than said detection area, wherein said pattern includes an elongated area extending over a center part of said detection surface and a pair of flanking areas on both sides of said elongated area, wherein either of said elongated area and said flanking areas is said dark area, the other being said bright area, wherein said elongated area is parallel to said perpendicular direction, and wherein said standard position is calculated from standard direction position data at said valley of said double-peaked shape.

5. The method of claim 1 wherein said pattern includes an elongated area extending over a center part of said detection surface, a pair of flanking areas on both sides of said elongated area and a pair of background areas on both sides of said flanking areas in said standard direction, wherein either of said elongated area and said flanking and background areas is said dark area and the other being said bright area, wherein boundaries between said flanking and background areas on both sides in said standard direction are separated by a distance that is smaller than the width of said detection area in said standard direction, wherein said elongated area is parallel to said perpendicular direction, and wherein said standard position is calculated from standard direction position data at said valley of said double-peaked shape.

6. The method of claim 1 wherein the step of setting said target includes the step of setting environmental condition of said target so as to be of about same reflectivity as the reflectivity of either of said dark part and said bright part.

7. In a monitoring apparatus for carrying out a measurement operation by receiving waves from a first detection area in each of standard directional positions and comprising a radar that outputs data for determining at least the position of an object in said first detection area at least from the quantity of received waves and a camera for obtaining an image of a second detection area that overlaps with said first detection area, a method of adjusting orientations of said first and second detection areas, said method comprising the steps of:

setting a single target in an overlapping area where said first detection area and said second detection area overlap and adjusting said first detection area based on results of measurement of said target by said radar; and

thereafter detecting axial displacement of said second detection area based on an image of said target taken by said camera, adjusting said second detection area and obtaining a parameter for coordinate transformation between said radar and said camera.

8. The method of claim 7 further comprising the steps, carried out by a processing device, of:

obtaining axial displacement data related to axial displacement of said first detection area or said second detection area based on said results of measurement by said radar or said image of said target taken by said camera;

causing said displacement data to be displayed on a display; and

causing a user to change said first detection area or said second detection area while observing said display until the axial displacement of said first detection area or said second detection area comes to be within a specified range.

9. The method of claim 7 further comprising the steps of:

determining first adjustability based on said image of said target taken by said camera;

determining second adjustability based on said results of measurement by said radar;

determining whether or not axial adjustment is possible based on said first adjustability and said second adjustability; and

not carrying out said axial adjustment of said first detection area and said second detection area if it is determined that said axial adjustment is not possible.

10. The method of claim 7 wherein said target has a detection surface with a specified outer shape, a bright part with a higher reflectivity for waves and a dark part with a lower reflectivity than said higher reflectivity for waves being arranged over said detection surface in a specified pattern, wherein a waveform of wave quantity having a double-peaked shape corresponding to at least one selected from the group consisting of said pattern and said outer shape of said detection surface is obtained with respect to a standard position in a standard direction if said measurement operation is carried out in said standard direction by directing said first detection area of said radar towards said detection surface, wherein said first detection area is adjusted by the steps of:

setting said target in front of said radar and setting environmental condition of said target so as to be of about same reflectivity as the reflectivity of either of said dark part and said bright part;

carrying out said measurement operation by scanning in said standard direction with said radar to obtain a waveform of wave quantity with said double-peaked shape and calculating axial displacement of said first detection area based on said waveform; and

correcting said axial displacement by a correction step selected from the group consisting of adjusting an attachment angle of said radar and changing a parameter for setting said first detection area.

11. The method of claim 7 wherein said parameter is obtained by a processing device carrying the steps of:

detecting a plurality of characteristic points on said detecting surface of said target from said image taken by said camera;

determining coordinates of said characteristic points on said image; and

determining axial displacement of said second detection area based on said determined coordinates.

12. The method of claim 11 wherein said coordinates are determined by said processing device carrying out the steps of:

causing said image taken by said camera to be displayed on a display;

determining a cut-out image of a specified region containing said characteristic points on said display according to an input by a user; and

carrying out an image processing on said cut-out image.

13. The method of claim 11 wherein said characteristic points are at angles and corners of boundary lines of a brightness-darkness pattern formed on said detection surface of said target, said processing device further carrying out the steps of:

carrying out an image processing to thereby extract straight lines from said image of said target taken by said camera;

having said extracted straight lines displayed on a display; and

thereafter determining coordinates on said image of those of crossing points of said straight lines indicated by a user.

14. The method of claim 11 wherein said second detection area is adjusted by said processing device carrying out the steps of:

registering as a template a image of an environment of said characteristic points on said image of said target before adjustment; and

searching the image of said template by normalized cross-correlation process to thereby obtain new coordinates of said characteristic points on said image after said adjustment from the image of said target after said adjustment.